Sources Sought

1. Executive Overview

The Department of Veteran Affairs (VA), under the VistA Evolution (VE) Program, is in the process of updating its electronic health record (EHR) systems to a single, comprehensive, event based point of care application. The updated EHR system, called the enterprise Health Management Platform (eHMP), is intended to provide significant new support for Veteran-centric, team-based, quality driven healthcare. It adds new features to tailor and track care to Veteran functional goals and preferences, provides robust long-running workflow and decision support for clinicians, and gathers new data in a way that VA can analyze healthcare patterns to increase quality and efficiency of operations. VA does not see eHMP as an inwardly facing custom development project. VA seeks to develop eHMP along with standards that allow VA to access commercial content for workflow and decision support.

There are two types of challenges that VA has had in realizing the vision of eHMP articulated above: agile development and community collaboration. Utilizing a scaled agile methodology has been extremely advantageous due to this project's size, scope, and evolution of requirements and priorities. However, the program has experienced multiple challenges in transitioning to a truly agile model due to restrictions in our previous fixed price acquisition strategy. This document is intended to gather input from the industry on potential acquisition strategies that would decrease both financial and performance risk for the government as well as the development team, while also improving flexibility.

2. Background

The VE Program was established to oversee enhancements to VA's EHR, and consists of a variety of health care projects organized into a portfolio for effective management. The EHR is currently part of the Veterans Information Systems and Technology Architecture (VistA). Specifically, the Computerized Patient Record System (CPRS), which was created to automate the patient record, has been implemented VA wide for many years, and has won multiple awards during its lifetime. There are many additional components within the VistA system that contribute to the healthcare mission including Bar Code Medication Administration (BCMA) and multiple ancillary packages. The VE Program is focused on improving many aspects of the current systems by improving re-usability (develop once and reuse often), improving its ability to consume and implement open source and commercial products, utilize current healthcare data standards, improve security and auditability, reduce costs, and reduce time to market. Some of the primary goals of the VE Program are to 1) improve interoperability with Department of Defense (DoD) and other healthcare partners to provide information VA clinicians can act upon, 2) enhance VistA to support a patient-centric, goal oriented, team-based health care deliver model, and 3) to establish robust information technology architecture to underpin current usage and future innovation.

The VA is in the process of transitioning from the current Project Management Accountability System (PMAS) to a new more agile process called Veteran focused Integration Process (VIP). The eHMP program is one of the pilot efforts for adoption of the new processes. The pilot period extends from Jan 2016 through March 2016. It is expected that the new process will be updated and refined both during and after the pilot phase. It is anticipated that all VA projects will be compliant with VIP by the end of 2016.

As the VA modernizes its EHR systems, we are fully committed to the use of open standards and open architectures to ensure seamless interoperability and information sharing across the VA, with DoD and across the health care community. By enhancing current legacy systems, consolidating point of care tools, and incorporating new state of the art technologies, VA will provide our clinicians with the best healthcare information technology point of care tools available in the industry. The Enterprise Health Management Platform (eHMP) is a critical cornerstone to the VE Program and will provide the infrastructure and user interface that will eventually replace CPRS as VA's primary point of care application.

3. eHMP Current Status

The eHMP Program is currently underway and has delivered multiple releases with several upcoming releases in various stages of development and planning. The eHMP Program has implemented a scaled agile development methodology and is producing incremental releases. The eHMP Leadership team currently consists of a combination of VA government staff from the Office of Information and Technology (OI&T) as well as Veterans Health Administration (VHA). This combined leadership team provides both the traditional program management in addition to the clinical and technological vision for the evolution of the current systems to the desired EHR state.

eHMP is being designed as an event driven open platform. The user interface combines features from the current CPRS as well as new features and functionality not available in the current VistA system. The current VistA system is decentralized and deployed locally at each medical center with site specific variations. While eHMP is a centralized platform, site specific deployment is required to update the local VistA system with changes required to be compatible with the latest eHMP release. eHMP has established several key partner sites for initial deployment, testing and feedback prior to proceeding with nationwide deployment of eHMP releases.

The need to deliver new functionality to the field, remove pain points or obstacles, provide an interoperable EHR, and ensure all CPRS functions are being accounted for is a constant challenge in prioritization for eHMP resources. Because of this struggle, and the amount of functionality currently provided by CPRS, it will require several years to develop, test, implement and nationally deploy a full CPRS replacement. This requires that eHMP releases be backwards compatible with VistA, and specifically CPRS to the extent that no negative impact to either the patient, patient data or provisioning of care to the patient is experienced. This transition period requires both the legacy and new systems to run in parallel with providers using either system. This has significantly complicated the requirements, development and implementation of eHMP.

The eHMP user interface is web based as opposed to the current client server systems. Due to the end user expectations regarding response times, significant effort has been focused on ensuring eHMP responsiveness and effective utilization of the VA network and services. To support the necessary functionality, while achieving response metrics, eHMP has implemented the VistA Exchange service which provides the ability to have aggregated, standardized, and normalized data available from all VA sites, DoD and community partners for use in run time transactions. This also provides the VA with a rich data set to perform clinical decision support (CDS) transactions to enable more intelligent, interactive features for point of care use.

3.1 Current Challenges Experienced

Within the eHMP Program today we are experiencing several challenges that we hope to improve upon with future contract efforts. Some examples of these challenges are outlined below:

a) It has been taxing on the development team to continue to refine and evolve deployed software while moving on with new development tasks. This can occur if we find within the VA there is a product that is already developed and/or deployed that partially meets the eHMP needs in a particular functionality

space. While it is generally advantageous for VA to evolve a single product in any particular functionality space rather than support multiple products in the same space, it frequently involves multiple project teams and contract teams to make this happen. Additionally, the timing of the discovery for the needed convergence may not occur until after the projects and contracts have already been issued and are underway. It is highly unlikely that the VA has allowed ourselves enough flexibility for the necessary collaboration, coordination, and actual development to converge on a single product in the previously issued acquisitions. .

b) Within eHMP we have multiple contracts with specific purposes. Because all contracts were not known when the original multiyear eHMP contract was issued, we were unable to build into the funding or deliverable model the support for the training, assistance or collaboration required of one development team to work with another.

c) The need for government oversight is tremendous with a program of this size, supported by so many individual scrum teams. It has been challenging to have both timely government visibility and government direction for each of the scrum teams. As a result the contractor lead scrum teams have operated with much more autonomy than desired.

d) The eHMP program has experienced issues due to the shortage of VistA expertise both in VA and available to eHMP contractors. This shortage has negatively impacted the program schedule, ability to deliver, ability to provide appropriate development oversight, and is expected to continue due to the limited resources available both in VA and the community.

e) Level of effort estimations have been challenging on functionality being delivered in eHMP. Each type of functionality delivered can vary greatly based up what is currently available in the industry, open source, or the VA. This might be significantly different than when the contract task was written. Additionally due to the need for compatibility and "do not harm" requirements with current VistA and CPRS, some functions which appear simplistic at first blush can require more complicated requirements that require design changes and potentially multiple iterations. Conversely other functionality that was thought to be more complex becomes more simplified by something provided by a VA or industry partner.

f) Due to complex nature of the eHMP, the development environment needed to create and test new functionality within it using the software development kit SDK is complex as well. It has been a challenge to get well-documented requirements and processes for re-creating this environment for other contractors as well as VA personnel who wish to work with the eHMP. Additionally, the hardware requirements for running the environment are prohibitive for many desktop-level developers. There is a need to somehow simplify or perhaps modularize the environment so that the setup and use of it is not a potential barrier to further development. The Innovations Future Technology Lab's pending development sandbox will help greatly in mitigating this challenge, but nonetheless it should remain an issue that needs some level of attention going forward.

3.2 eHMP v1.2

eHMP v1.2 is a read-only version, combining components of CPRS and the Joint Legacy Viewed (JLV), which was developed in partnership with DoD. eHMP v1.2 is an enhanced User Interface (UI) with condition-based analysis and user-defined workspaces. Version 1.2 provides a longitudinal view of the full patient record, including all VA VistA data, DoD data and available community partner data. Security and auditing are enhanced significantly by the ability to audit all access to patient data, rather than only on specific records. Additional features include text search, patient photo, multiple charts and graphs that present information to

providers in new and inventive ways improving their ability to quickly and comprehensively review applicable data for provisioning of patient care.

Version 1.2 has been deployed to multiple medical centers' production systems. Continued deployment is underway and expected to be nationwide in early to mid 2016.

3.3 eHMP v1.3

eHMP v1.3 is the initial write back iteration with improved access management and comprehensive audit and reporting capabilities. Version 1.3 provides for outpatient encounters, progress notes, and lab orders using services including task management, CDS, and notifications. eHMP v1.3 development is predominately complete and is targeted for use with identified partner sites' production systems during the third quarter of FY16.

3.4 eHMP v2.0

eHMP v2.0 is currently in the development cycle and is targeted for completion in late summer of 2016. The release will likely be in initial production site testing at the completion of the current contract effort. A subsequent contract effort will be required to complete the partner site testing phase, updates and complete enterprise wide deployment. eHMP 2.0 will provide many enhanced write back capabilities and will integrate with the VA Single Sign On (SSO) service. Additionally, v2.0 capabilities include either initial iterations or enhancements to activity management, task management, team management, order management, consults, observations goals, problem lists, CDS, forms, alerts/notifications and clinical workflows.

3.5 Software Development Kit

Development modularity and services exist at multiple levels – the user interface, middle tier, data levels and the platform. The SDK provides cross cutting functionality including identity management, user management, access management, auditing, 508 compliance, common look and feel, and many other items that should remain constant across all provided features and capabilities. The SDK is comprised of the Application Development Kit (ADK) and the Resource Development Kit (RDK). The SDK can be used by multiple development teams in tandem to effectively add new applets, services, or update the platform while remaining consistent to eHMP standards.

3.6 Release, Integration and Sustainment

The eHMP effort is not limited to development and internal testing. The eHMP development team is primarily responsible for release management. They are also required to interact with the eHMP partner sites for installation and local testing of the VistA system to ensure eHMP is not negatively impacting the medical center as we roll to production. Resolution of any issues and/or defects discovered during this process is also required. Because eHMP is an enterprise system and we fully support the re-use model, multiple integrations with external services will be required. This could be to consume a service, to import data, incorporate content, or any variety of needs the eHMP system may have. Finally the eHMP team is required to sustain all the eHMP environments in conjunction with our data center staff, support help desk calls, and resolve all production issues.

4. eHMP Future State

With previous versions of eHMP focused on initial iterations for most features, the next phase of eHMP will be focused on enhancements and advancements of these foundational components. Examples of areas potentially requiring enhancements are;

Patient Encounters	Progress Notes
Notifications	Clinical Workflows
Orders	Consults
Concept relationship	CDS
Complex event processing	Patient Goals
Patient Observations	Problem Lists
Forms	Data Annotation
Medication regimen	Medication Reconciliation
Activity Management	Task Management
Team Management	Auditing
Access Management	Help
SDK	Various Platform Components

Additionally, remaining functionality currently provided in CPRS must be incorporated into eHMP. This will allow for full end user transition from CPRS to eHMP and eliminate the need to run two primary point of care applications side by side. In addition to CPRS, there are multiple production clinical systems that VA would like to sunset, with the requisite functionality being provided inside eHMP. The level of effort designated to each of these efforts will be based upon input from eHMP system users, the eHMP leadership team, Vista Evolution leadership and VA priorities.

In addition to the enhancements discussed, many new types of functionality have been identified for inclusion in future versions of eHMP. Both types of functionality (enhancements and new features) will be developed and/or integrated iteratively based upon agile backlog prioritization. Examples of new features are;

Human Notification Services	Team Instant Messenger
Workload Capture	Natural Language Processing
Cohort/Panel Management	Automated Classification Methodology
Stateful Data Reconciliation	Information Assembly
Workspace Layout and List	Applet Face and List
Applet Content	Document/Notes Templates
Interactive Graphics	Care Plan Manger
Negation Tools	Patient Flow Management
Personal Management	Data Panels Support
Multi Form-Factor Presentation	Platform Engines and Services

The eHMP platform will also be enhanced to ensure VA ability to consume standards based content that has been generated outside of eHMP, either within the VA or the health care community at large. This will limit the proprietary content eHMP will be required to generate and manage itself, and allow greater interoperability with larger community. The platform will require the capability to ingest, extract and compile both internally and externally developed and managed content at run time.

While eHMP will be exclusively developing and implementing many of the capabilities discussed above, it will also be common for eHMP to integrate with, or potentially enhance, currently existing services, applications,

systems, etc. to support the VA philosophy of re-use. Analysis will be required to determine the best path forward depending on what is available in the enterprise currently, what is planned by other VA programs, Open Source availability, and software or content available in the community. Consideration will also be required based upon various timelines of both upstream and downstream dependencies, as well as congressional and legislative deadlines. The VA available budget, as well as current pain points experienced by our care providers, will also be key drivers of eHMP feature prioritization.

5. eHMP Agile Expectations

It is the expectation of the VA to procure services that will allow for development and implementation of eHMP features and functionality managed by a scaled agile process, with a flexible prioritized backlog subject to frequent adjustments, with iteratively delivered functionality in a maximum of 3 months cycles.

The program will require multiple clinical feature development teams and technical feature development teams working in tandem, with additional teams focused on dedicated features such as testing, security and 508 compliance, training, infrastructure and deployment.

The SDK will be used by all development teams and will require updates based on any changes to underlying functionality or the eHMP platform used in the SDK. It is expected that other development teams outside of the eHMP program (both internal and external to VA) will use the SDK to develop applets, services and platform enhancements that will be considered for incorporation into the eHMP systems.

5.1 Agile Ceremonies

5.1.1 Sprints and Sprint Retrospective

Each development team will be required to have a Scrum Master. Each team will have scrum meetings with a frequency based upon the need of that individual team. At the conclusion of each sprint the team will hold a Sprint Retrospective to ensure challenges encountered and opportunities for improvements are discussed.

5.1.2 Sprint Review

A Sprint Review will consist of both in person and remote attendance of various eHMP team members and other VA stakeholders. Each scrum team will have a representative participate. The Sprint Review shall consist of both demonstrations and discussions of work accomplished during the sprint, any issues or roadblocks encountered, and various agile metrics such as burn down, velocity, etc. as determined by the eHMP leadership team. Sprint Reviews will be held bi-weekly, in the commutable Washington DC area, on a consistent date/time to allow for appropriate planning.

5.1.3 Sprint Retrospective and Sprint Planning

After each Sprint Review a Sprint Retrospective will be held to discuss the effectiveness of each sprint and necessary adjustments needed. Specifically any workload not completed as planned during the sprint, defects discovered, new scope added, etc. will need to prioritized and/or added to the backlog as necessary. Additionally if work items need to shift out of upcoming sprints to allow for inclusion of discovered items,

discussion and decisions are necessary to adjust future sprints. If external dependencies exist on items being shifted, coordination with the appropriate parties will need to occur.

5.1.4 Release Planning

Each eHMP Release (3 month development cycle) will have a multi-day planning session consisting of in person participation by key VA government leadership and subject matter experts, key contract leadership, feature team developers, and other individuals identified as necessary participants. During this event the eHMP goals and non-goals for each feature will be discussed collectively and in breakout groups for each feature. Each feature team will work through the associated backlog and user stories with their subject matter experts to determine the work required, develop a feature sprint backlog, and identify dependencies on other eHMP teams or other VA projects. Identified work will be assigned to feature team staff. Cross team dependencies will be coordinated either during breakout sessions or at the conclusion of the Release Planning event.

5.1.5 Release Retrospective

An eHMP Release Retrospective will be held with representation from eHMP leadership, contract leadership, and key development teams. The purpose of the Release Retrospective at a basic level will be to determine what went well, what was challenging, and what can be improved for the next Release.

5.1.6 Backlog Management and Grooming

Due to the size and scope of eHMP and all its partners, stakeholders and dependent projects/programs/products, continuous backlog grooming and schedule management will be required. This is required both within eHMP and its various teams as well as across projects/programs/products and initiatives.

6. Industry Collaboration

In order for eHMP to be a sustainable technology and for VA to have sustainable access to content for decision support, VA must engage in a variety of collaborations with healthcare systems and commercial vendors. There are two needs for collaboration. First, any vendor team is unlikely to have access to the breadth of highly specialized expertise required to produce the knowledge and technical architectures to make eHMP work as desired. Second, VA's designs need to be compatible with reference architecture, API standards, and content standards so that VA may participate in a market place for technology and content that will allow to VA to keep pace with the broader market.

Traditional contractor approaches to teaming agreements and control of deliverables make it difficult for the contractor to engage in the required cooperative activities. These include participation in formulation of functional specifications for new or revised standards such as Fast Health Information Resources, Uniform Communications, Human Notifications, and Care Coordination. Contractors see participation in these activities as distractions from providing deliverables. However, deliverables without these engagements quickly become obsolete and must be refactored at greater expense to the government. Similarly, incorporation of advanced methods for decision support require rare expertise. Even if the contractor has expertise of this nature on board, there is pressure to fall back on usual practices of software delivery without adequately engaging required experts.

7. Input Requested

Due to the aforementioned challenges encountered by the program during our previous eHMP development cycles, embracing a truly agile model is paramount as we move forward. While there are many issues in adopting a scaled agile methodology that are internal to the VA, the current FFP acquisition was not fully successful at enabling implementation of a true scaled agile operating model. This document has been designed to gather input from industry to update our acquisition strategy, vehicles used, contract type, deliverable distinction, quality tracking and payment models. An optimal solution would remove as much risk from both the government and the vendor as possible while improving flexibility. This requires a high level of confidence for the government that significant program progress can be achieved, actual software is delivered, implemented in the field, and effectively in use by end users. Additionally an effective acquisition model will reduce risk to the vendor so that an effective pricing model can be achieved without incorporating a high financial buffer to address a high level of risk.

Specific VA questions are listed below. However, additional input will be accepted. At its sole discretion VA reserves the right to contact individual submitters directly to further discuss input received if the VA has questions on the response submitted or a concept is presented that warrants additional conversation. This does not obligate the VA to contact any or all of the submitters. Please ensure points of contact and contact information are included in responses if there is interest in further discussions.

7.1 Deliverables

Shifting to agile offers the opportunity to adjust the way in which deliverables are defined. Previously we have defined deliverables with a certain level of detail that has limited the vendor's ability to be flexible if the requirements have shifted since contract award.

a) Rather than undertaking contract modifications to make these adjustments, how can deliverables be defined to ensure flexibility while also ensuring the government receives something of value, and the vendor has completed an item for payment?
b) Should an agile ceremony such as a sprint review be used as a deliverable?
    a. If so, should all source code and documentation be packaged into the deliverable?

7.2 Payment Model

As we move to an agile methodology the payment model becomes less defined.

a) Should payments to the vendor be based on a specific Deliverable Description, Sprint, Release, Backlog Item, User Story (or other suggestion), and how does the government account for the variation in size and scope of each?
b) Should payments be broken out by scrum team?
c) What if several teams are delivering effectively while other teams are struggling?
d) Should we use an agile calculation like Velocity for payment purposes? If so, what calculation method would be recommended? How does the government ensure the Velocity (or other method suggested) calculation is fair to the government?

7.3 Contract Type

The VA traditionally uses Firm Fixed Price (FFP), Time and Materials (T&M) or a combination of the two.

a) Are these effective contract types for use on an agile development vehicle? If so, how?
b) Are there other types of contracts that would be more effective? If so, how?

7.4 Input to Release Planning

The VA is in the process of revamping internal processes to make adjustments to how business requirements are captured, documented and shared with the development teams to fit the scaled agile model. However, this transition will not happen overnight.

a) What would be preferred to support an agile development model:
    1) The latitude to complete these documents in conjunction with the business teams,
    2) Wait for the documents to be delivered to the development teams,
    3) The ability to invoke an optional task to complete the documents if delays occur, or
    4) Other?

7.5 Contract Vehicles

What contract vehicles can be used by your company for this type of effort?

7.6 Number of Scrum Teams

The number and type of scrum teams would be directly related to the amount of work accomplished.

a) Should the government dictate the number and type of scrum teams or allow the contractor to add and remove teams as they see fit?
b) If the government does not dictate the number and type of scrum teams how do we avoid over promise and under delivery?
c) Should the government dictate the amount of work assigned to each scrum team?

7.7 Evolve Other Products

During the development of eHMP we are sure to uncover projects with similar technology efforts underway within the VA space that may be building or supporting something that could be used by eHMP. Frequently we find that a piece of data is missing, the functionality is available but no service to reach it, or a minor adjustment to the other application would provide significant cost savings to either eHMP of the VA in general. This type of detailed information is likely to become known during the development cycle as a result of interaction with other technical teams. For programs with active development contracts with appropriate scope to accept the request from eHMP the update is simple. The challenge being experienced now is that frequently the other project may not have an active development contract in place to account for this additional request by eHMP.

a) In order to cover this gap, what contract model could be implemented by eHMP to ensure the eHMP development team could make the required updates?
b) How do we address the unknown scope or skillsets needed without causing the vendor to provide a higher pricing model to account for the unknowns?

7.8 Non Delivery

While agile methodology allows for flexibility there will be times when a vendor should be delivering and isn't.

a) What methodologies could be used to determine when a vendor is not delivering appropriately?
b) What mechanisms could be used for incentive to ensure delivery?
c) What mechanisms should be implemented due to non-delivery?

7.9 Other eHMP Contract Teams

eHMP will be comprised of resources from multiple simultaneous contracts throughout its lifecycle.

a) How can the government ensure a strong partnership between multiple contract teams all supporting eHMP?
b) How does the government account for the time and effort of this partnership?

7.10 Scrum Team Involvement

For appropriate government planning;

a) What is the correct level of government involvement and oversight for a development scrum team?
    i. What would be the recommended approach for interaction with a government Feature Lead that prefers a high level of involvement in day to day activities?
    ii. What would be the recommend approach for interaction with a government Feature Lead that prefers involvement at elicitation, major decisions, and feature acceptance?
b) What are some viable alternatives if the government does not have the requisite level of support available?
    i. Would it be beneficial to the government and the vendor to pause development of a particular feature if the requisite government support is not available?
    ii. If so, what methodology would be used to notify the government of the need?

7.11 Scrum Team Composition

The composition of the scrum teams can directly impact productivity and ability of a team to accomplish a feature within a team.

a) Should the government be involved in approving the contract product owners for a feature?
b) Should the government be involved in approving the composition of the full scrum team?

7.12 Level of Effort Estimation

To date we have not been successful on accurate level of effort estimation for delivery of functionality.

a) How can the government improve its methodology for level of effort estimation to design, develop and implement functionality?
b) What methodology should the vendor use?
c) How do we ensure honesty without all the excessive padding in time, or reduction in scope to avoid risk?

7.13 Company Information

Please include the following information in your submission

a) Company Name
b) Cage Code
c) DUNS Number
d) Contracting POC Information
e) Technical POC Information
f) Likelihood of participating as a Prime Offeror/Subcontractor